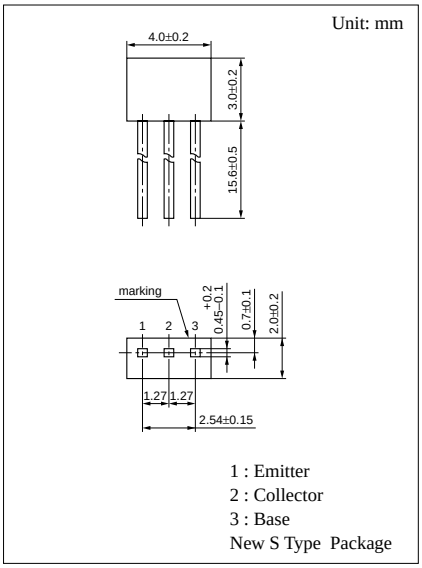
UNR4111/4112/4113/4114/4115/4116/4117/4118/4119/4110/411D/411E/411F/411H/411L

(UN4111/4112/4113/4114/4115/4116/4117/4118/4119/4110/411D/411E/411F/411H/411L)

Silicon PNP epitaxial planer transistor

For digital circuits



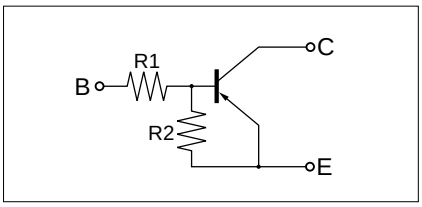
Features

- Costs can be reduced through downsizing of the equipment and reduction of the number of parts.
- New S type package, allowing supply with the radial taping.

Resistance by Part Number

	(R_1)	(R_2)
● UNR4111	10kΩ	10kΩ
● UNR4112	22kΩ	22kΩ
● UNR4113	47kΩ	47kΩ
● UNR4114	10kΩ	47kΩ
● UNR4115	10kΩ	—
● UNR4116	4.7kΩ	—
● UNR4117	22kΩ	—
● UNR4118	0.51kΩ	5.1kΩ
● UNR4119	1kΩ	10kΩ
● UNR4110	47kΩ	—
● UNR411D	47kΩ	10kΩ
● UNR411E	47kΩ	22kΩ
● UNR411F	4.7kΩ	10kΩ
● UNR411H	2.2kΩ	10kΩ
● UNR411L	4.7kΩ	4.7kΩ

Internal Connection



Absolute Maximum Ratings (Ta=25˚C)

Parameter	Symbol	Ratings	Unit
Collector to base voltage	V_{CBO}	–50	V
Collector to emitter voltage	V_{CEO}	–50	V
Collector current	I_C	–100	mA
Total power dissipation	P_T	300	mW
Junction temperature	T_j	150	˚C
Storage temperature	T_{stg}	–55 to +150	˚C

Note) The part numbers in the parenthesis show conventional part number.

■ Electrical Characteristics (Ta=25˚C)

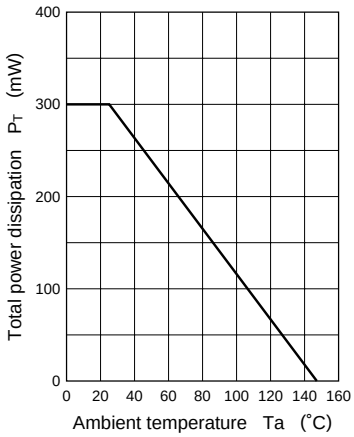
Parameter		Symbol	Conditions	min	typ	max	Unit
Collector cutoff current		I_{CBO}	V_{CB} = –50V, I_E = 0			– 0.1	µA
		I_{CEO}	V_{CE} = –50V, I_B = 0			– 0.5	µA
Emitter cutoff current	UNR4111	I_{EBO}	V_{EB} = –6V, I_C = 0			– 0.5	mA
	UNR4112/4114/411E/411D					– 0.2	
	UNR4113					– 0.1	
	UNR4115/4116/4117/4110					– 0.01	
	UNR411F/411H					–1.0	
	UNR4119					–1.5	
	UNR4118/411L					–2.0	
Collector to base voltage		V_{CBO}	I_C = –10µA, I_E = 0	–50			V
Collector to emitter voltage		V_{CEO}	I_C = –2mA, I_B = 0	–50			V
Forward current transfer ratio	UNR4111	h_{FE}	V_{CE} = –10V, I_C = –5mA	35			
	UNR4112/411E			60			
	UNR4113/4114			80			
	UNR4115*/4116*/4117*/4110*			160		460	
	UNR411F/411D/4119/411H			30			
	UNR4118/411L			20			
Collector to emitter saturation voltage		$V_{CE(sat)}$	I_C = –10mA, I_B = – 0.3mA			– 0.25	V
Output voltage high level		V_{OH}	V_{CC} = –5V, V_B = – 0.5V, R_L = 1kΩ	–4.9			V
Output voltage low level		V_{OL}	V_{CC} = –5V, V_B = –2.5V, R_L = 1kΩ			– 0.2	V
	UNR4113		V_{CC} = –5V, V_B = –3.5V, R_L = 1kΩ			– 0.2	
	UNR411D		V_{CC} = –5V, V_B = –10V, R_L = 1kΩ			– 0.2	
	UNR411E		V_{CC} = 5V, V_B = –6V, R_L = 1kΩ			– 0.2	
Transition frequency		f_T	V_{CB} = –10V, I_E = 1mA, f = 200MHz		80		MHz
Input resistance	UNR4111/4114/4115	R_1			10		kΩ
	UNR4112/4117				22		
	UNR4113/4110/411D/411E				47		
	UNR4116/411F/411L			(–30%)	4.7	(+30%)	
	UNR4118				0.51		
	UNR4119				1		
	UNR411H				2.2		
Resistance ratio	UNR4111/4112/4113/411L	R_1/R_2		0.8	1.0	1.2	
	UNR4114			0.17	0.21	0.25	
	UNR4118/4119			0.08	0.1	0.12	
	UNR411D			3.7	4.7	5.7	
	UNR411E			1.7	2.14	2.6	
	UNR411F			0.37	0.47	0.57	
	UNR411H			0.17	0.22	0.27	

* h_{FE} rank classification (UNR4115/4116/4117/4110)

Rank	Q	R	S
h_{FE}	160 to 260	210 to 340	290 to 460

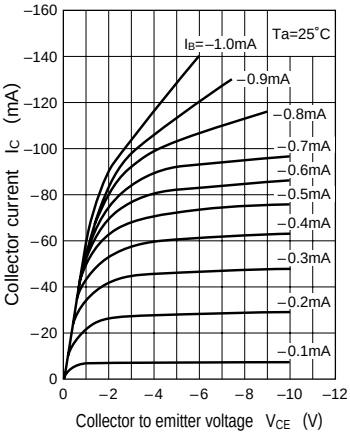
Common characteristics chart

P_T — Ta

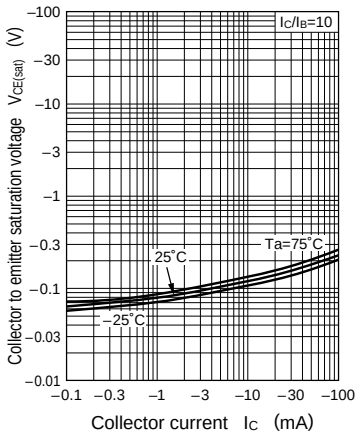


Characteristics charts of UNR4111

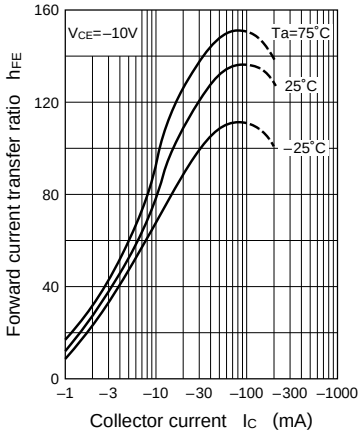
I_C — V_{CE}



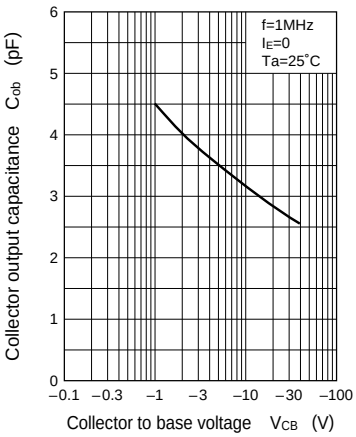
$V_{CE(sat)}$ — I_C



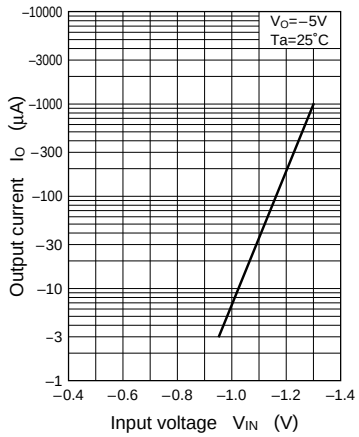
h_{FE} — I_C



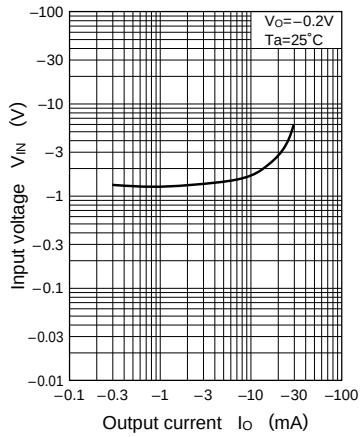
C_{ob} — V_{CB}



I_O — V_{IN}

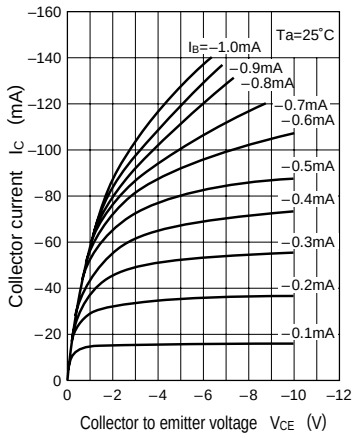


V_{IN} — I_O

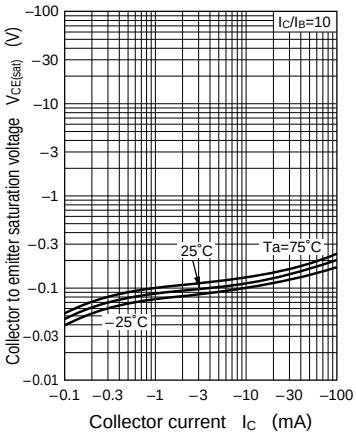


Characteristics charts of UNR4112

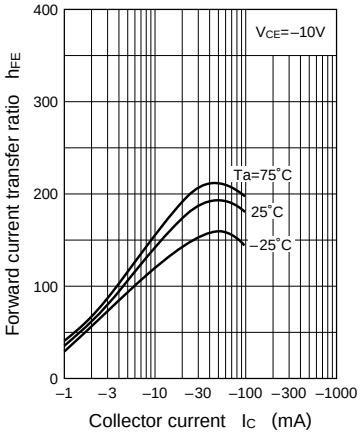
I_C — V_{CE}



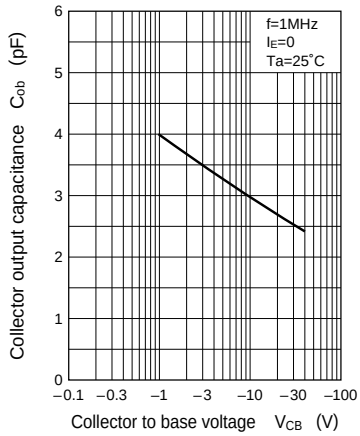
$V_{CE(sat)}$ — I_C



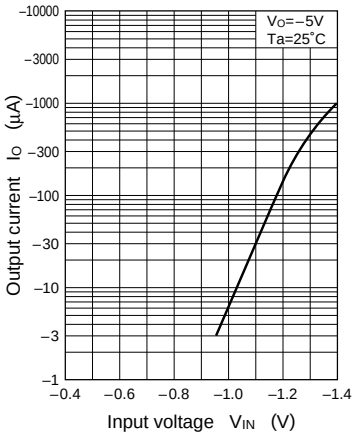
h_{FE} — I_C



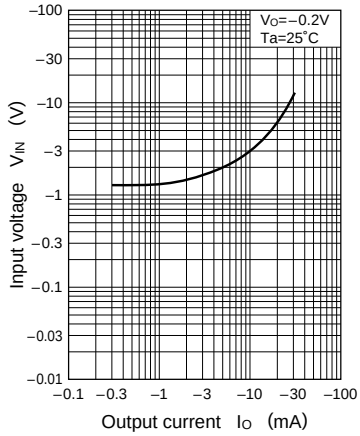
C_{ob} — V_{CB}



I_O — V_{IN}

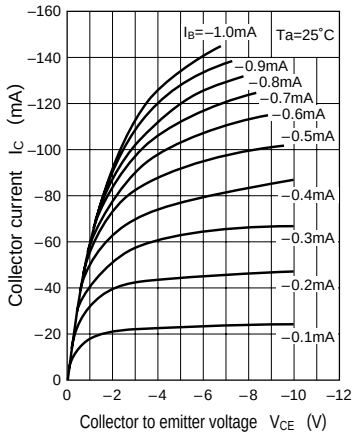


V_{IN} — I_O

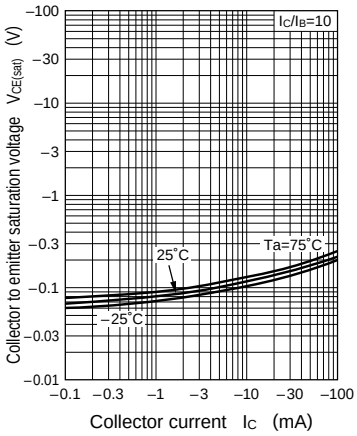


Characteristics charts of UNR4113

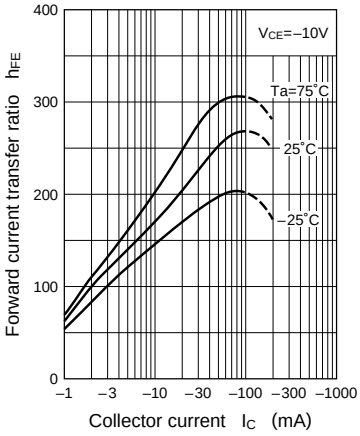
I_C — V_{CE}



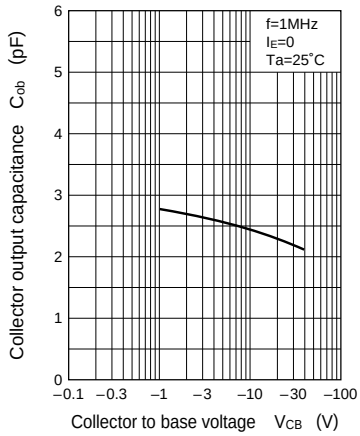
$V_{CE(sat)}$ — I_C



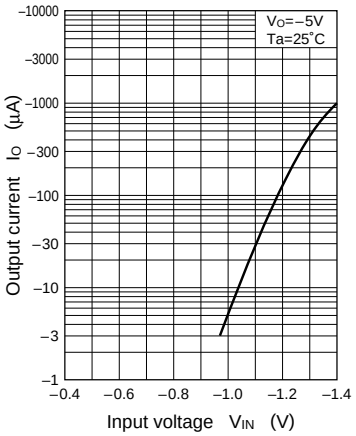
h_{FE} — I_C



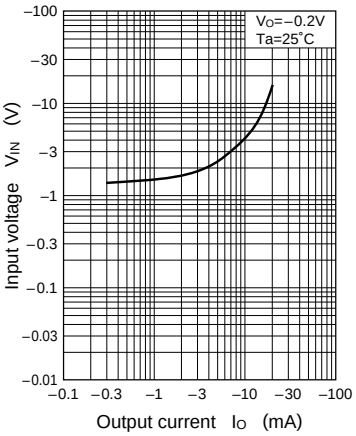
C_{ob} — V_{CB}



I_O — V_{IN}

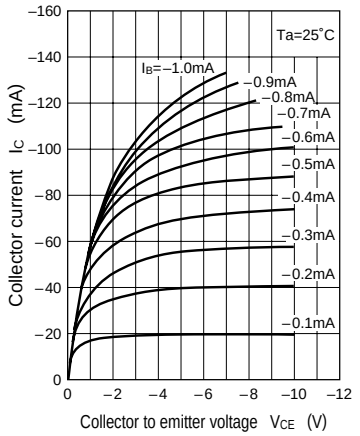


V_{IN} — I_O

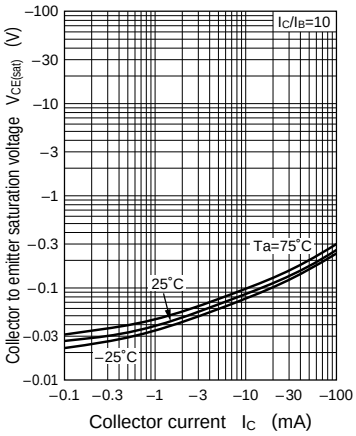


Characteristics charts of UNR4114

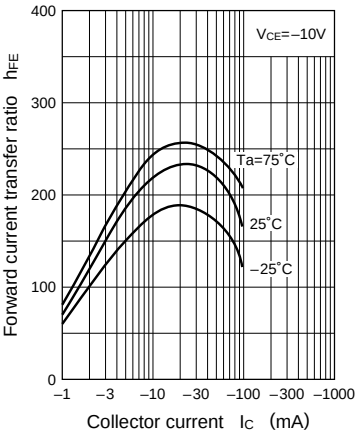
I_C — V_{CE}



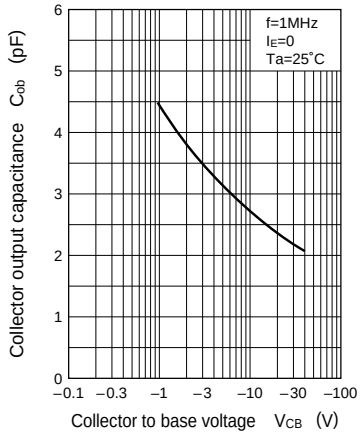
$V_{CE(sat)}$ — I_C



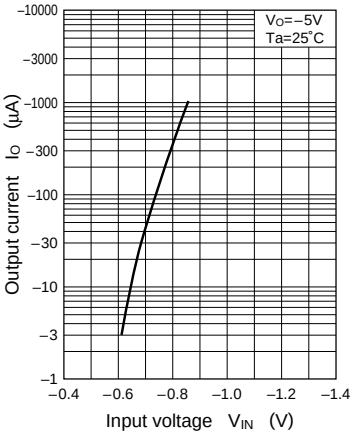
h_{FE} — I_C



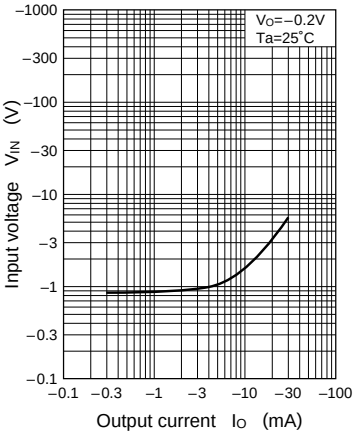
C_{ob} — V_{CB}



I_O — V_{IN}

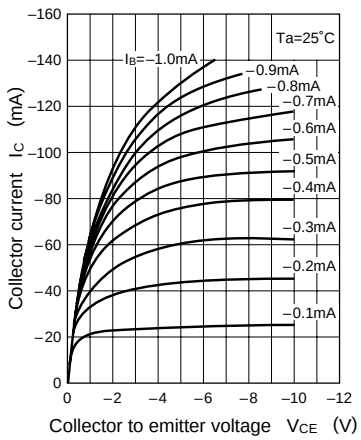


V_{IN} — I_O

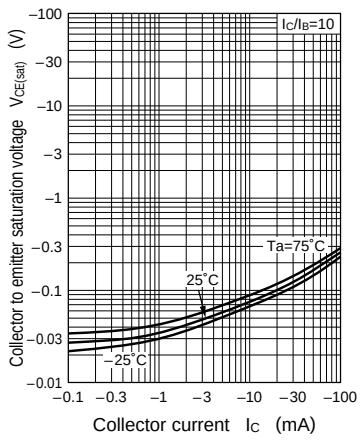


Characteristics charts of UNR4115

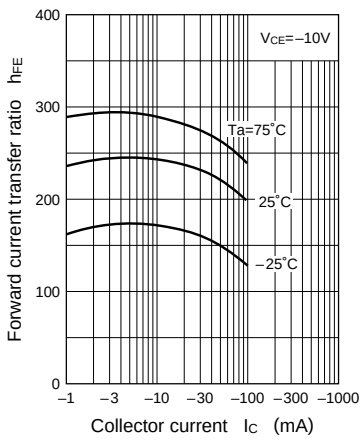
I_C — V_{CE}



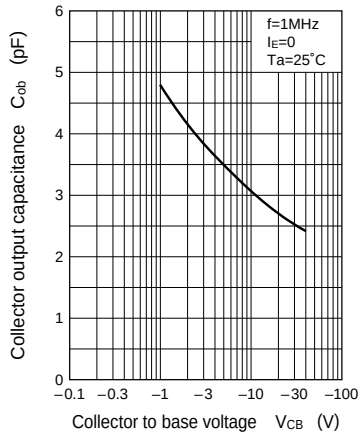
$V_{CE(sat)}$ — I_C



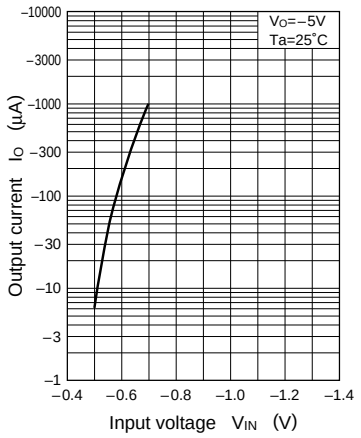
h_{FE} — I_C



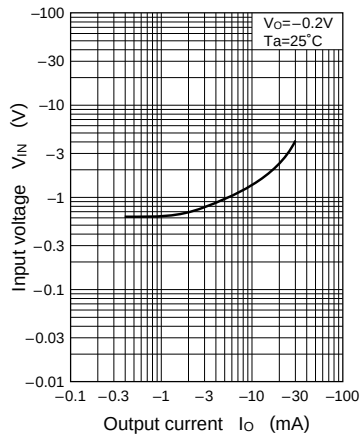
C_{ob} — V_{CB}



I_O — V_{IN}

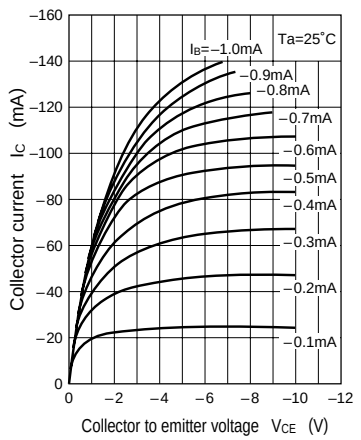


V_{IN} — I_O

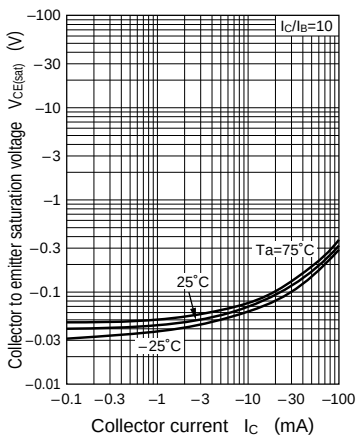


Characteristics charts of UNR4116

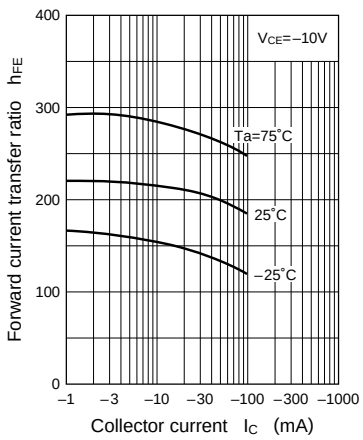
I_C — V_{CE}



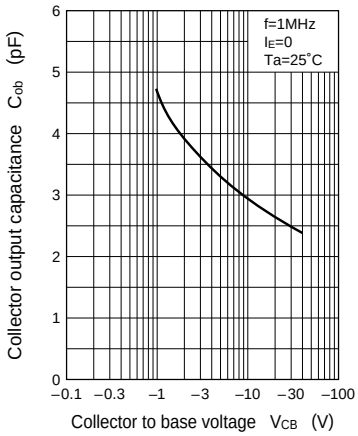
$V_{CE(sat)}$ — I_C



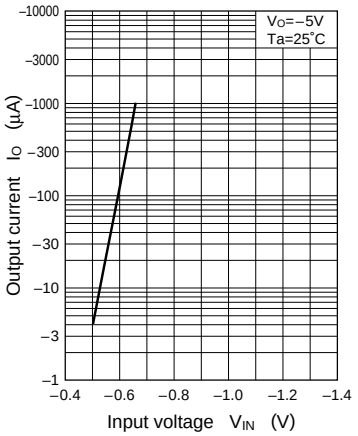
h_{FE} — I_C



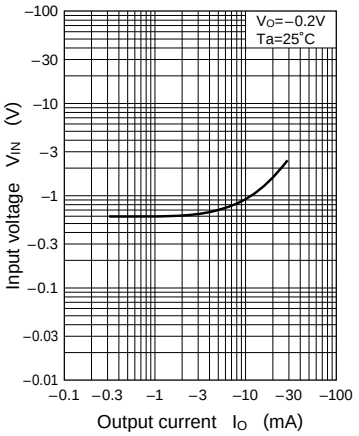
C_{ob} — V_{CB}



I_O — V_{IN}

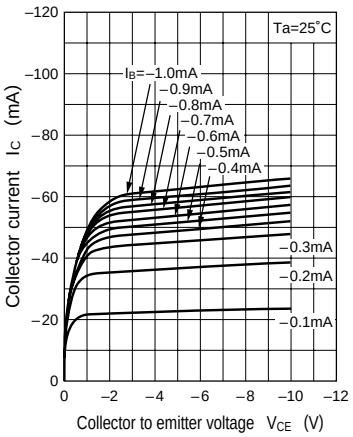


V_{IN} — I_O

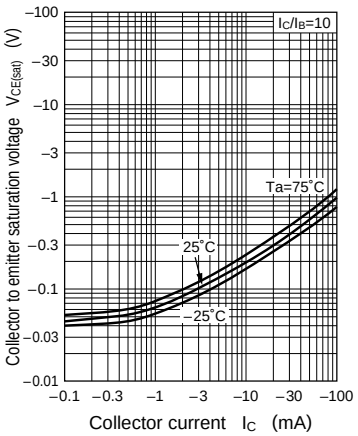


Characteristics charts of UNR4117

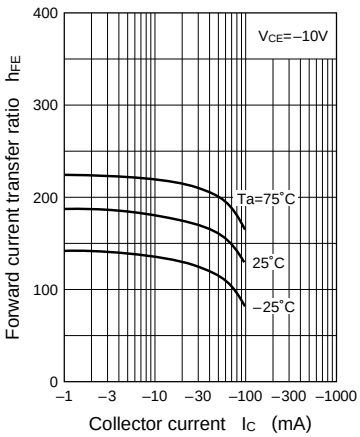
I_C — V_{CE}



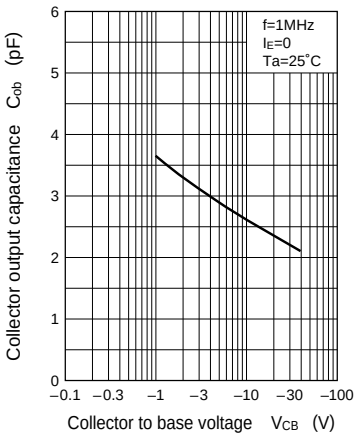
$V_{CE(sat)}$ — I_C



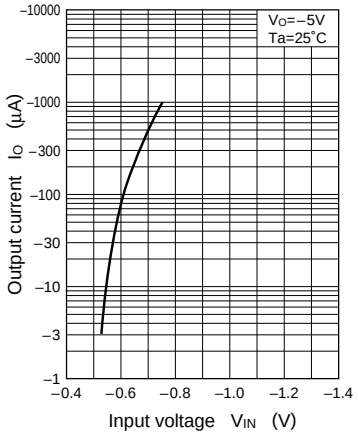
h_{FE} — I_C



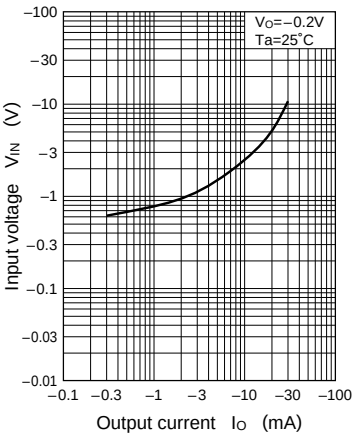
C_{ob} — V_{CB}



I_O — V_{IN}

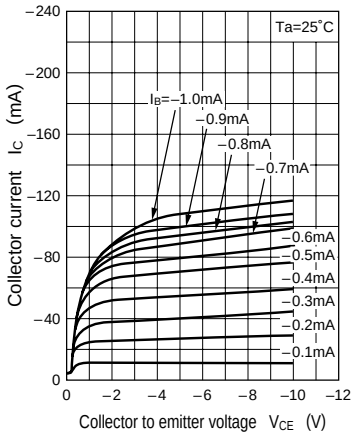


V_{IN} — I_O

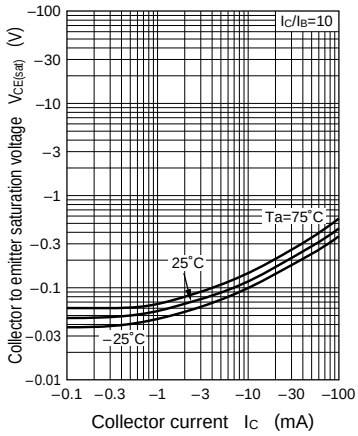


Characteristics charts of UNR4118

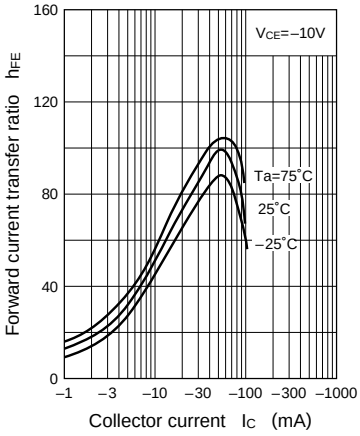
I_C — V_{CE}



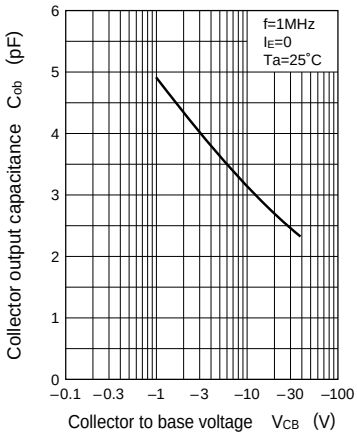
$V_{CE(sat)}$ — I_C



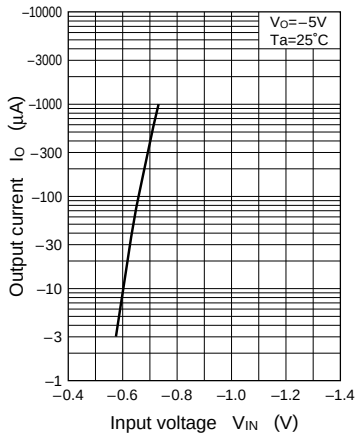
h_{FE} — I_C



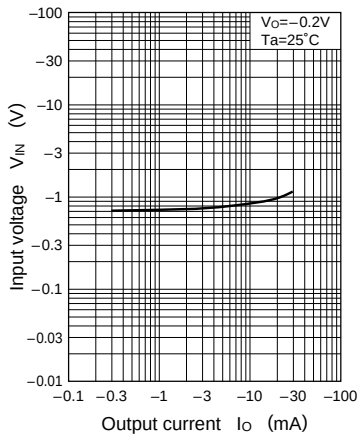
C_{ob} — V_{CB}



I_O — V_{IN}

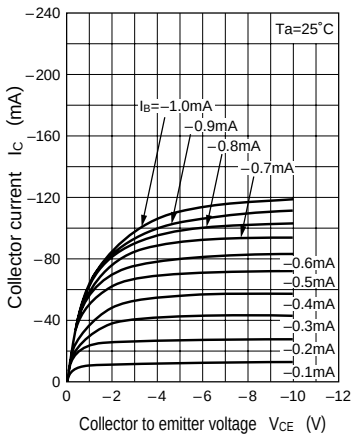


V_{IN} — I_O

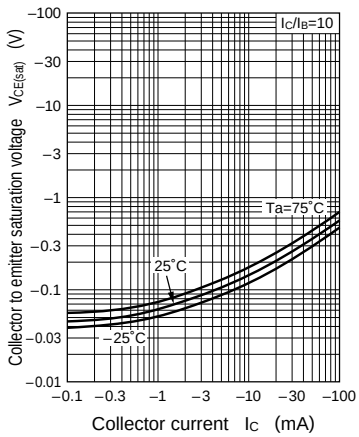


Characteristics charts of UNR4119

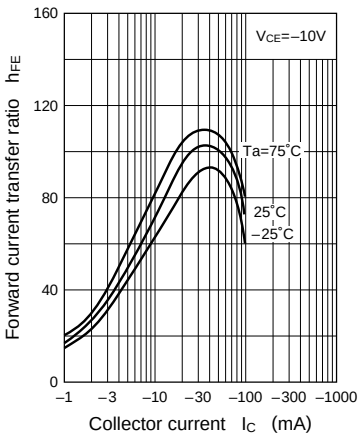
I_C — V_{CE}



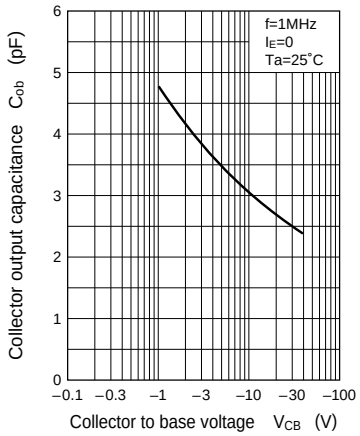
$V_{CE(sat)}$ — I_C



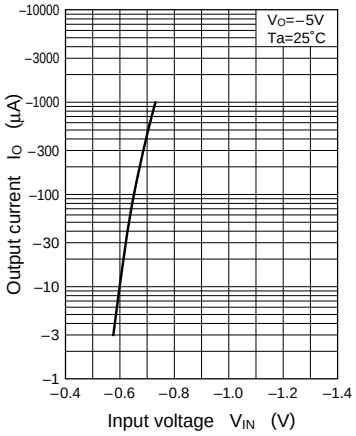
h_{FE} — I_C



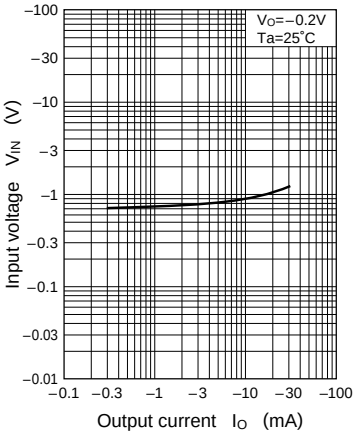
C_{ob} — V_{CB}



I_O — V_{IN}

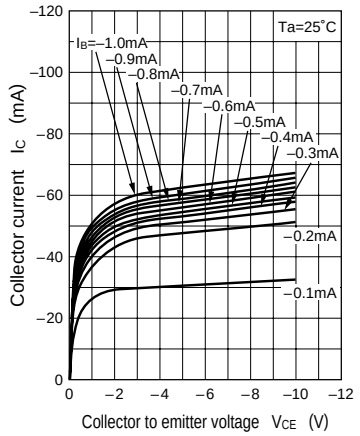


V_{IN} — I_O

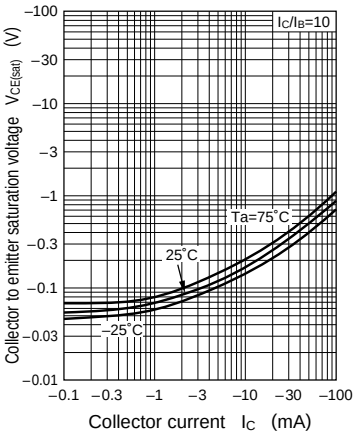


Characteristics charts of UNR4110

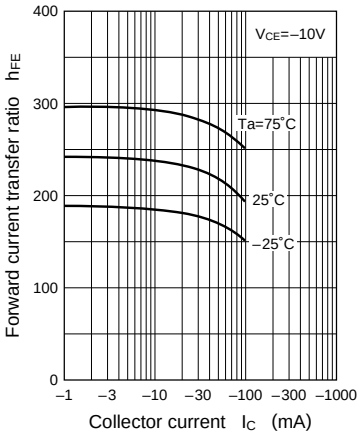
I_C — V_{CE}



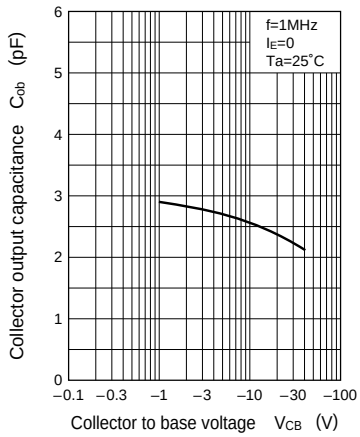
$V_{CE(sat)}$ — I_C



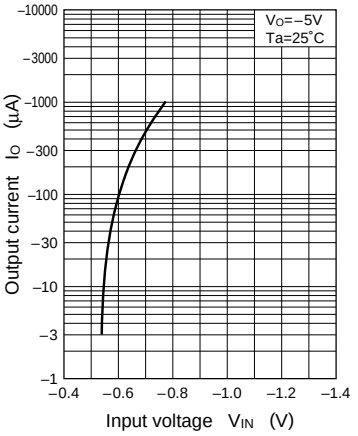
h_{FE} — I_C



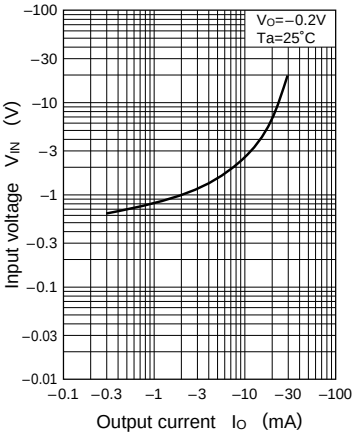
C_{ob} — V_{CB}



I_O — V_{IN}

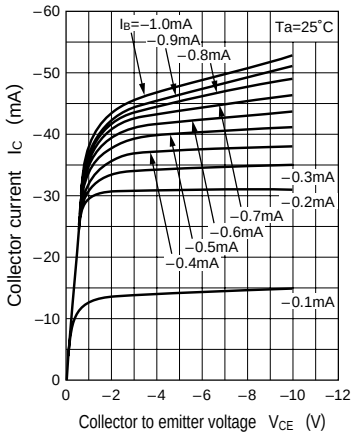


V_{IN} — I_O

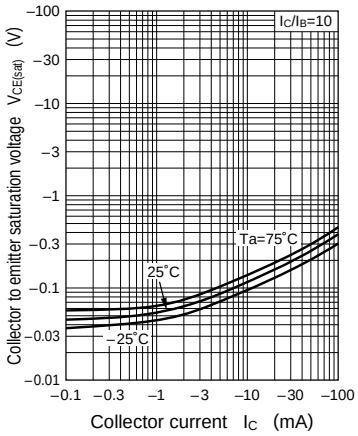


Characteristics charts of UNR411D

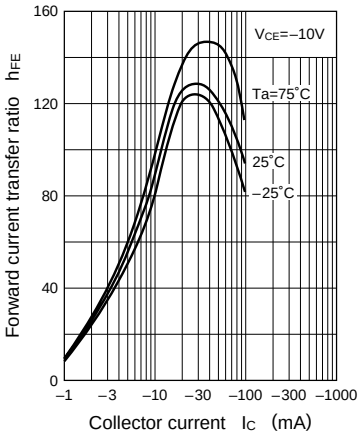
I_C — V_{CE}



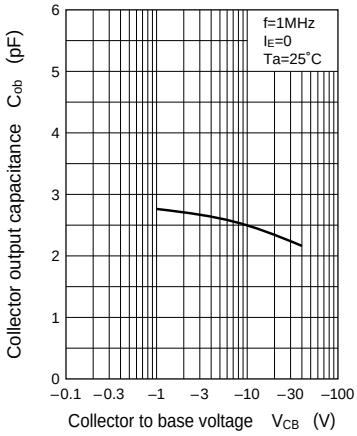
$V_{CE(sat)}$ — I_C



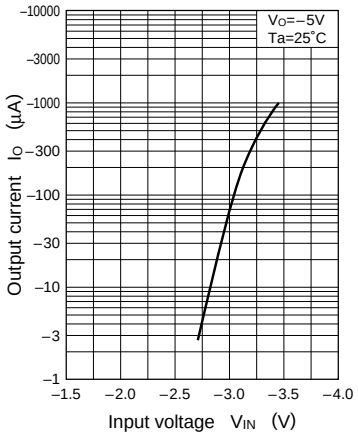
h_{FE} — I_C



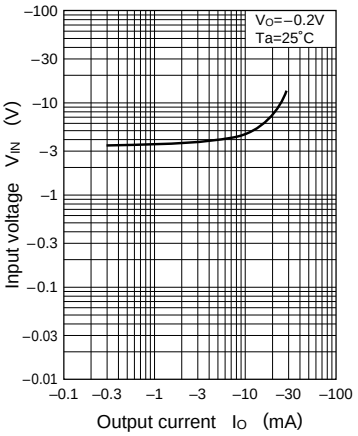
C_{ob} — V_{CB}



I_O — V_{IN}

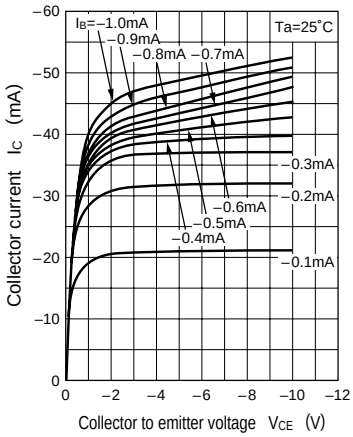


V_{IN} — I_O

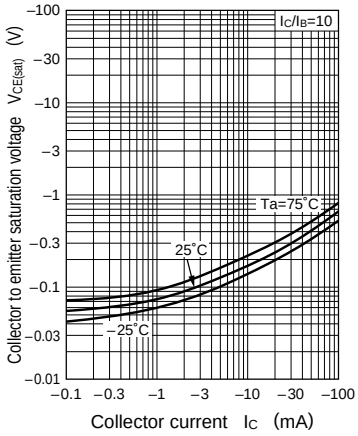


Characteristics charts of UNR411E

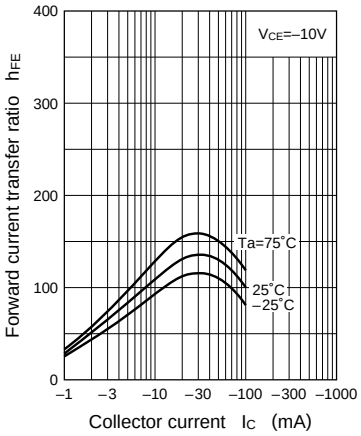
I_C — V_{CE}



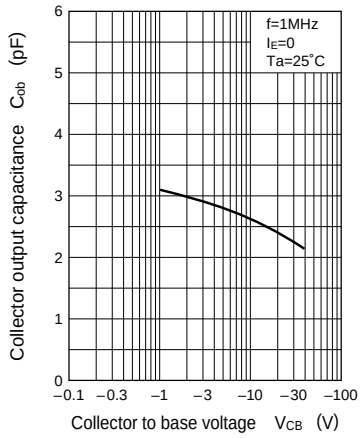
$V_{CE(sat)}$ — I_C



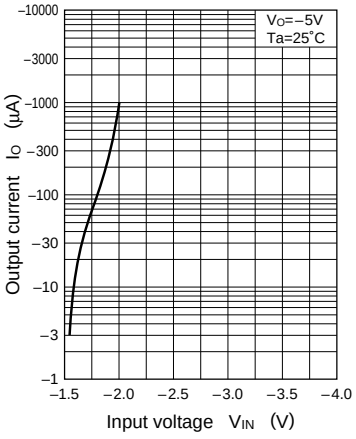
h_{FE} — I_C



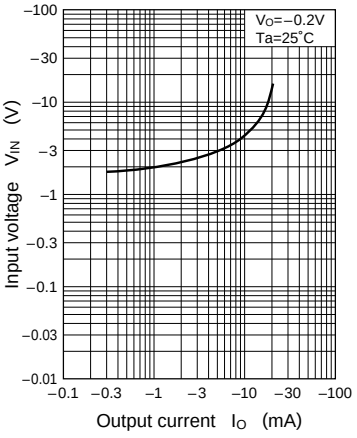
C_{ob} — V_{CB}



I_O — V_{IN}

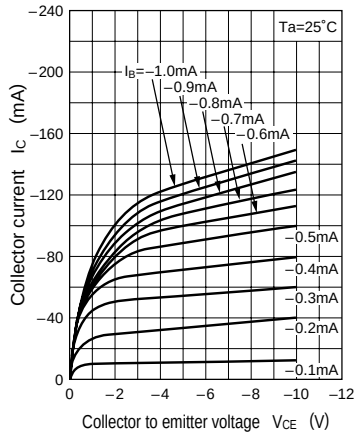


V_{IN} — I_O

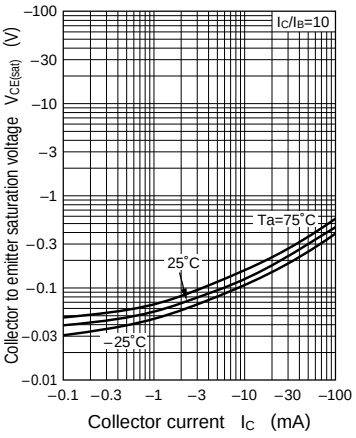


Characteristics charts of UNR411F

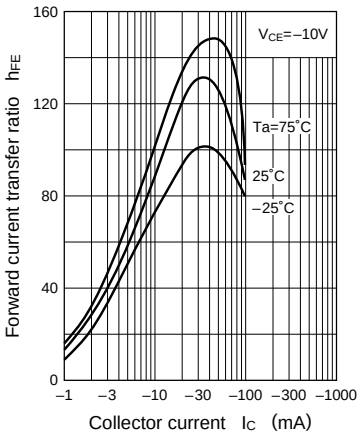
I_C — V_{CE}



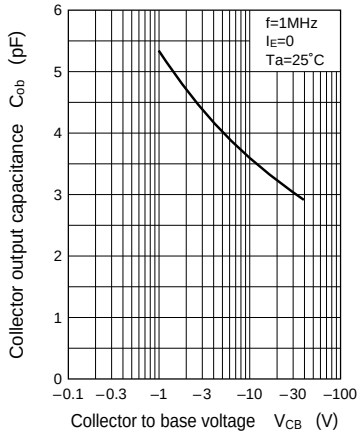
$V_{CE(sat)}$ — I_C



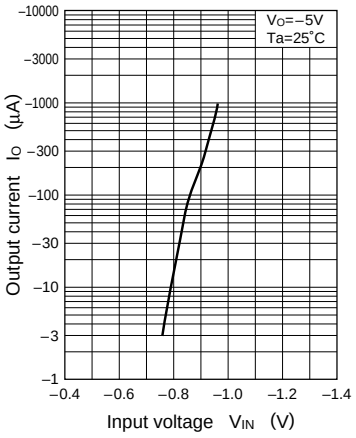
h_{FE} — I_C



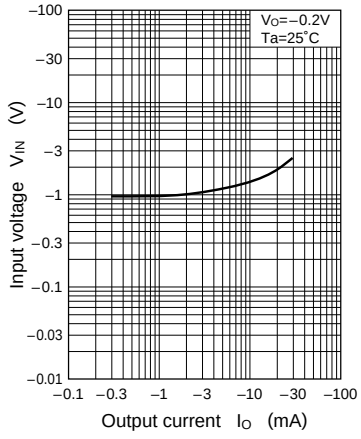
C_{ob} — V_{CB}



I_O — V_{IN}

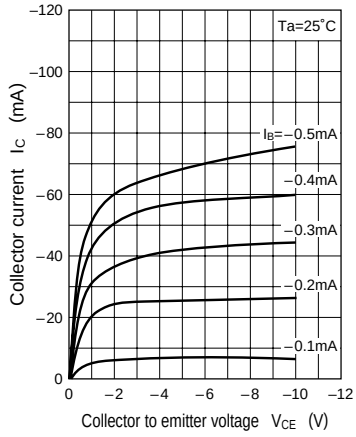


V_{IN} — I_O

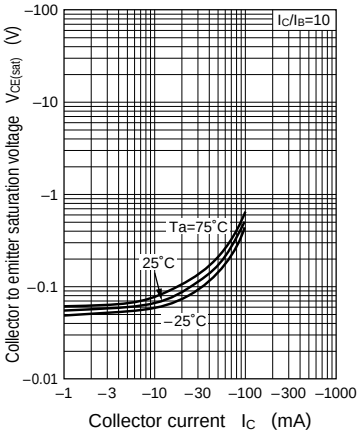


Characteristics charts of UNR411H

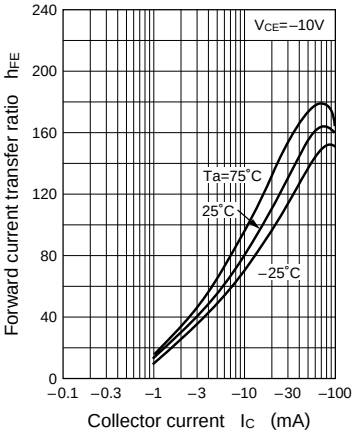
I_C — V_{CE}



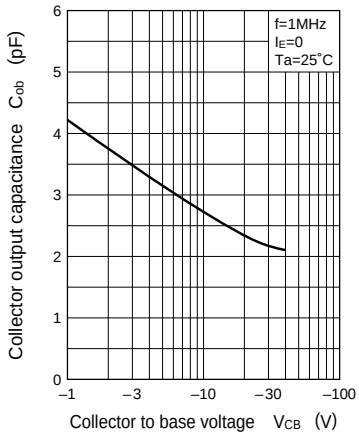
$V_{CE(sat)}$ — I_C



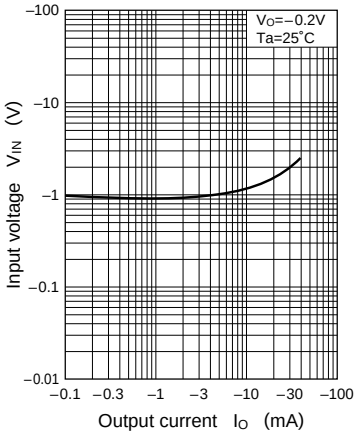
h_{FE} — I_C



C_{ob} — V_{CB}

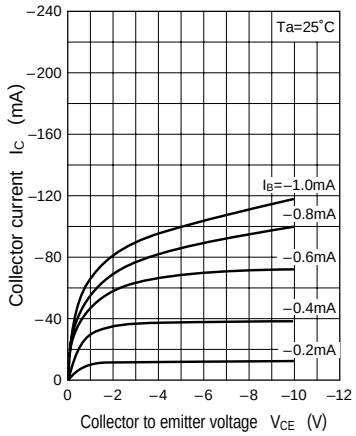


V_{IN} — I_O

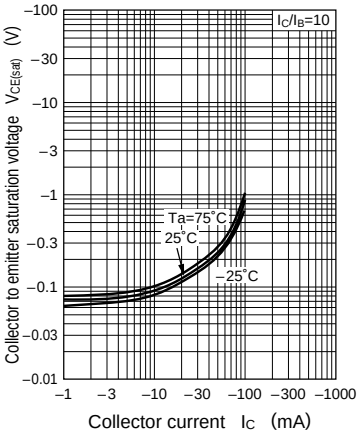


Characteristics charts of UNR411L

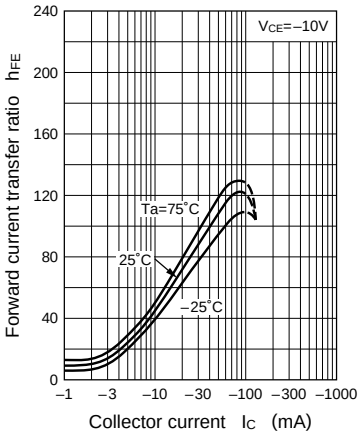
I_C — V_{CE}



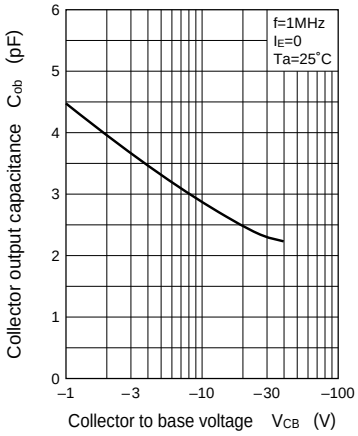
$V_{CE(sat)}$ — I_C



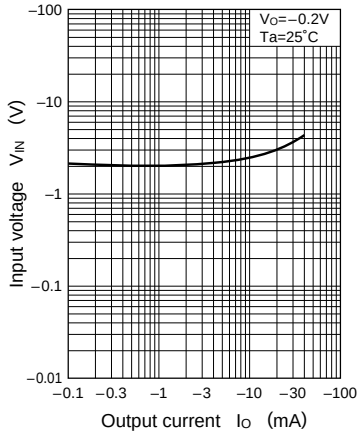
h_{FE} — I_C



C_{ob} — V_{CB}



V_{IN} — I_O



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